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Using SWOT - AHP Approach in Determining the Dimensions of the Investment in Biogas Technology and its Location in Syria

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Abstract

The need for reliable and renewable energy sources in Syria in the light of the civil war and the strong embargo is increasing. Therefore, current situation is opening interest in biogas technology as a solution for potential energy crises. The process of selecting the appropriate site for constructing biogas units is complex, and for its evaluation, it requires many different criteria. Therefore, the objective of this study is to determine the dimensions of the incubating environment for investment in biogas technology and to prioritise the criteria that affect investment in areas for establishing small scale biogas plants. Data collection (via questionnaire surveys) took place from June to August 2019 in the following provinces: Latakia, Tartus, Homs, Hama, Damascus, Sweida, and Daraa (provinces which are currently safely accessible). The research targeted 255 farms (227 livestock farmers and crop farmers and 28 owners of biogas units) to identify the strategic dimensions that must be exploited using the SWOT model and AHP (Analytic Hierarchy Process). AHP was divided into two levels, the first level is represented in the standards of the reality of biofuels in Syria. The second level is represented by three main alternatives that represent the study areas, which are the southern, central, and coastal regions. The study, using the SWOT model, found out the strategic direction of using biogas technology. The optimal strategy is to exploit the opportunities most likely to succeed based on the available strengths. These strengths represented by the Syrian society's acceptance of the technology and the desire to use it. The AHP model results show that the common approach to the use of biogas and the by-product organic fertiliser gained the highest weight among the criteria related to the community's adoption of biogas technology. The southern region was proved as the most suitable area for investment in biogas units followed by the central region and the coastal region. The study provides a structured general framework of the prospects for the application of biogas technology that helps decision-makers and planners make decisions based on a systematic method.

Keywords: Biogas technology, developing countries, organic waste, renewable energy

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